

CLAIMS

1. A method for assembling a discharge light source comprising:
positioning a first lead to enter said discharge light source from an end; and
5 positioning a second lead to enter said discharge light source from said end.

2. The method of claim 1 further comprising:
providing a base;
passing said first lead through said base wherein said base forms a first airtight seal
10 around said first lead;
passing said second lead through said base wherein said base forms a second airtight
seal around said second lead;
attaching a first electrode to said first lead;
attaching a second electrode to said second lead;
15 positioning a bulb wherein said base is encircled by an open end of said bulb and
wherein said bulb and said base enclose said first and second electrodes;
filling said bulb with a gas; and
attaching said base to said bulb wherein said bulb forms a third airtight seal around
said base.

3. The method of claim 2 wherein said base is made of glass.

4. The method of claim 2 wherein said bulb is made of glass.

25 5. The method of claim 2 wherein the thermal expansion coefficient of said base
is greater than $1.0 \times 10^{-6}/K$.

6. The method of claim 2 wherein the thermal expansion coefficient of said base is approximately equal to the thermal expansion coefficient of said bulb.

7. The method of claim 2 wherein the thermal expansion coefficients of said first lead and said second lead are approximately equal to the thermal expansion coefficient of said base.

8. The method of claim 2 wherein the power of said discharge light source is less than 50 watts.

9. The method of claim 2 wherein said first and second electrodes are made of tungsten.

10. The method of claim 2 wherein said step of attaching said first electrode to said first lead comprises:
spot welding said first electrode to said first lead.

11. The method of claim 10 wherein said step of spot welding comprises:
positioning a weld agent between said first electrode and said first lead; and
melting said weld agent.

12. The method of claim 11 wherein the melting point of said weld agent is higher than an operating temperature of said discharge light source and lower than the melting points of said first lead and said first electrode.

13. The method of claim 11 wherein said first electrode is made of tungsten and said first lead is made of molybdenum.

14. The method of claim 13 wherein said weld agent is made of platinum.

15. The method of claim 13 wherein said weld agent is made of tantalum.

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16. The method of claim 2 further comprising:
cleaning said gas by positioning a getter inside said discharge light source.

17. The method of claim 16 wherein said getter is made of tantalum.

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18. The method of claim 16 wherein said getter is made of titanium.

19. The method of claim 16 wherein said getter is made of zirconium.

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20. The method of claim 2 wherein a gap between said first electrode and said second electrode is parallel to said first and second leads.

21. The method of claim 2 wherein a gap between said first electrode and said second electrode is perpendicular to said first and second leads.

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22. The method of any one of claims 20 or 21 wherein the length of said gap is less than eighty percent of the inner diameter of said bulb.

23. The method of any one of claims 20 or 21 wherein the length of said gap is less than seventy-five percent of the inner length of said bulb.

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24. The method of claim 2 further comprising:

positioning a brace wherein said brace attaches to said first lead between said first electrode and said base and wherein said brace attaches to said second lead between said second electrode and said base.

5 25. The method of claim 2 further comprising:
supplying an alternating current to said first and second leads.

26. The method of claim 2 further comprising:
supplying a direct current to said first and second leads.

10 27. The method of claim 2 wherein said gas is xenon.

28. The method of claim 2 wherein the pressure of said gas is greater than one bar.

15 29. The method of claim 2 wherein the closed end of said bulb is a lens.

30. A discharge light source comprising:
a first lead configured to enter said discharge light source from an end; and
a second lead configured to enter said discharge light source from said end.

20 31. The discharge light source of claim 30 further comprising:
a base wherein said first lead passes through said base wherein said base forms a first
airtight seal around said first lead and wherein said second lead passes through said base
wherein said base forms a second airtight seal around said second lead;

25 a first electrode wherein said first electrode is attached to said first lead;
a second electrode wherein said second electrode is attached to said second lead;

a bulb wherein said base is encircled by an open end of said bulb and wherein said bulb and said base enclose said first and second electrodes;

a gas wherein said gas is enclosed by said base and said bulb; and

an attaching mechanism configured to attach said base to said bulb wherein said bulb

5 forms a third airtight seal around said base.

32. The discharge light source of claim 31 wherein said base is made of glass.

33. The discharge light source of claim 31 wherein said bulb is made of glass.

10 34. The discharge light source of claim 31 wherein the thermal expansion coefficient of said base is approximately equal to the thermal expansion coefficient of said bulb.

15 35. The discharge light source of claim 31 wherein the thermal expansion coefficient of said base is greater than $1.0 \times 10^{-6}/K$.

20 36. The discharge light source of claim 31 wherein the thermal expansion coefficients of said first lead and said second lead are approximately equal to the thermal expansion coefficient of said base.

37. The discharge light source of claim 31 wherein the power of said discharge light source is less than 50 watts.

25 38. The discharge light source of claim 31 wherein said first and second electrodes are made of tungsten.

39. The discharge light source of claim 31 wherein said first electrode is spot welded to said first lead.

40. The discharge light source of claim 39 further comprising:

5 a weld agent positioned between said first electrode and said first lead wherein said weld agent is configured to hold said first electrode to said first lead after said weld agent is melted and allowed to cool.

41. The discharge light source of claim 40 wherein the melting point of said weld agent is higher than an operating temperature of said discharge light source and lower than the melting points of said first lead and said first electrode.

42. The discharge light source of claim 40 wherein said first electrode is made of tungsten and said first lead is made of molybdenum.

43. The discharge light source of claim 42 wherein said weld agent is made of platinum.

44. The discharge light source of claim 42 wherein said weld agent is made of tantalum.

45. The discharge light source of claim 31 further comprising:
a getter configured to clean said gas.

46. The discharge light source of claim 45 wherein said getter is made of tantalum.

47. The discharge light source of claim 45 wherein said getter is made of titanium.

48. The discharge light source of claim 45 wherein said getter is made of zirconium.

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49. The discharge light source of claim 31 wherein a gap between said first electrode and said second electrode is parallel to said first and second leads.

50. The discharge light source of claim 31 wherein a gap between said first electrode and said second electrode is perpendicular to said first and second leads.

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51. The discharge light source of any one of claims 49 or 50 wherein the length of said gap is less than eighty percent of the inner diameter of said bulb.

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52. The discharge light source of any one of claims 49 or 50 wherein the length of said gap is less than seventy-five percent of the inner length of said bulb.

53. The discharge light source of claim 31 further comprising:
a brace configured to hold said first lead and said second lead in position wherein said
brace attaches to said first lead between said first electrode and said base and wherein said
brace attaches to said second lead between said second electrode and said base.

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54. The discharge light source of claim 31 further comprising:
an alternating current wherein said current is supplied to said first and second leads.

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55. The discharge light source of claim 31 further comprising:
a direct current wherein said current is supplied to said first and second leads.

Table 1. Demographic characteristics of the study population	
Age (years)	65.0 ± 10.0
Gender	
Male	50.0%
Female	50.0%
Education (years)	12.0 ± 2.0
Marital status	
Married	60.0%
Single	40.0%
Occupation	
Retired	70.0%
Unemployed	30.0%
Income (USD/month)	1,200 ± 300
Health status	
Good	60.0%
Fair	40.0%
Poor	0.0%
Comorbidities	
Hypertension	30.0%
Diabetes	20.0%
Cholesterol	10.0%
Smoking status	
Smoker	10.0%
Non-smoker	90.0%
Alcohol consumption	
Regular	5.0%
Occasional	15.0%
Never	80.0%

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Male	50.0%
Female	50.0%
Education (years)	12.0 ± 2.0
Marital status	
Married	60.0%
Single	40.0%
Occupation	
Retired	70.0%
Unemployed	30.0%
Income (USD/month)	1,200 ± 300
Health status	
Good	60.0%
Poor	40.0%
Comorbidities	
Hypertension	30.0%
Diabetes	20.0%
Cholesterol	10.0%
Smoking status	
Smoker	10.0%
Non-smoker	90.0%
Alcohol consumption	
Drinker	5.0%
Non-drinker	95.0%

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Marital status	
Married	60.0%
Single	40.0%
Occupation	
Retired	70.0%
Unemployed	30.0%
Income (USD/month)	1,200 ± 300
Health status	
Good	60.0%
Poor	40.0%
Comorbidities	
Hypertension	30.0%
Diabetes	20.0%
Cholesterol	10.0%
Smoking status	
Smoker	10.0%
Non-smoker	90.0%
Alcohol consumption	
Drinker	5.0%
Non-drinker	95.0%

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Cholesterol	10.0%
Smoking status	
Smoker	10.0%
Non-smoker	90.0%
Alcohol consumption	
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